

ORTHO B COMPLEX



CLINICAL APPLICATIONS

- Supports Healthy Methylation and Carbohydrate Metabolism
- Promotes Nervous System, Immune and Adrenal Health
- Supports Neurotransmitter Production for a Positive Mood
- Protects Against Stress-Induced Nutrient Depletion

ESSENTIAL NUTRITION

Ortho B Complex is a balanced and comprehensive B complex supplement that contains eight essential B vitamins, along with choline and inositol. B vitamins have historically been taken together for their synergistic role in supporting energy production, immune health, cardiovascular health and neurological health. Adequate B vitamin intake is essential for maintaining energy levels and additional intake is often needed by those with high levels of stress. Ortho B Complex offers high-quality nutrients, that help to build a healthy micronutrient reserve, including USP* B vitamins to support energy production and folate for optimal methylation.

Overview

A wide and complex variety of B vitamins is essential for the body to convert food into cellular energy. This water-soluble group of vitamins is first absorbed in the small intestine and then travels to the liver where they are biotransformed into their coenzyme forms. One of the key roles of B vitamins is to serve as prime coenzymes for the Krebs cycle, the biochemical pathway responsible for maintaining energy production in the form of cellular energy called adenosine triphosphate (ATP). In addition, B vitamins, particularly folate, B6 and B12, are required for proper methylation, a biochemical process that helps convert the problematic amino acid metabolite, homocysteine into the amino acids methionine and cysteine. Proper methylation is critical for supporting many aspects of mental and physical health, including regulating gene expression and DNA repair.

Deficiency†

Deficiency in any of the B vitamins can create a breakdown of metabolic processes that protect health. Many medications

deplete certain B-vitamins, including acetaminophen, aspirin, ibuprofen and oral contraceptives. In addition, stress and poor diet also deplete these nutrients. Deficiencies of folate, B6 and B12 can specifically impair proper methylation.

Thiamine (Vitamin B1)†

While naturally abundant in whole grains, thiamine is lost in many of the over-processed grains commonly consumed today.^[1] Thiamine is an essential co-factor in the production of ATP in the cells' Krebs cycle and is also needed for the metabolism of fats, proteins and carbohydrates.^[2] A recent randomized double-blind placebo-controlled trial found that supplementation with high-dose thiamine also supports blood sugar balance.^[3]

Riboflavin (Vitamin B2)†

Riboflavin is a precursor to flavin adenine dinucleotide (FAD) and flavin mononucleotide (FMN), both of which are central to energy production and intermediary metabolism, and act as powerful antioxidants.^[4] Riboflavin-depleted cells have been found to display signs of oxidative stress and disrupted energy generation.^[5] Studies have also shown that optimal riboflavin status has been found to help maintain healthy blood pressure levels in patients with certain genetic predispositions.^[6]

Niacin (as Niacinamide USP*)†

Niacin is a cofactor in the mitochondrial respiratory chain, which produces ATP.^[7] In the body, niacin is transformed into nicotinamide adenine dinucleotide (NAD) and nicotinamide adenine dinucleotide phosphate (NADP), which both play a role in oxidation reduction reactions in cells.^[7] Niacin or nicotinic acid has a long history of use in cardiovascular health,

† These statements have not been evaluated by the Food and Drug Administration. This product is not intended to diagnose, treat, cure, or prevent any disease.

having been shown in numerous studies to support healthy cholesterol levels.^[8,9]

Vitamin B6[†]

Vitamin B6 is involved in over 100 enzymatic reactions in the body and is essential for lipid metabolism, neurotransmitter formation, immune health and hormone modulation.^[10] A large, prospective study found that women who consumed, on average, 4.6 mg of vitamin B6 daily had significantly better markers of cardiovascular health compared to women who consumed an average of 1.1 mg daily.^[11] In addition, vitamin B6 has been found to boost the immune system in the elderly by increasing the activity of lymphocytes that promote optimal immune function.^[12,13]

Folic Acid[†]

Often associated with its use in pregnancy to ensure the proper development of healthy neural tubes in babies, folic acid plays a key role in many other functions, including DNA synthesis. Like vitamin B₆, folic acid is a key methyl donor^[14] and helps regulate mitochondrial enzymes and energy metabolism. A study of 1,980 Finnish men over 10 years found that those who consumed the most dietary folate had a significant benefit to their cardiovascular health compared with those who consumed the least amount of dietary folate.^[15]

Vitamin B₁₂ (Methylcobalamin)[†]

Vitamin B₁₂, found only in organ meats, seafood and egg yolks, often becomes deficient in vegan and vegetarian diets. The vitamin is essential for the metabolism of fats and carbohydrates, the synthesis of proteins, and also plays a role in regulating mitochondrial enzymes and energy metabolism, as well as neurological health.^[7] In a population study of 700 women aged 65 and over, more optimal B₁₂ levels were found to be associated with better mood balance and health.^[16]

Biotin[†]

Synthesized by the bacteria in the gut in addition to certain foods,^[17] biotin and its cofactors are involved in metabolism of fatty acids, amino acids and utilization of B vitamins.^[7] Biotin has also been found to support healthy blood sugar, both in animal^[18] and human studies. A randomized, double-blind, placebo-controlled clinical trial conducted among 70 patients age five to 25 years old, with blood sugar concerns, found biotin administration to promote blood sugar balance as well as healthy blood fats.^[19]

Pantothenic Acid[†]

Pantothenic acid and its biologically active derivative, CoA, are essential to the synthesis of important fatty acids, membrane phospholipids, amino acids, steroid hormones, and energy production.^[20] 95% of CoA is found in the mitochondria.^[20]

Pantothenic acid has also been shown to have a balancing effect on blood fats in animal studies ^[21] and has also been shown in the research to support normal tissue repair and recovery.^[22]

Choline Bitartrate[†]

Though not technically a B vitamin, choline is often associated with B vitamins. It is important in the construction of cell membranes and plasma lipoproteins, plays a role in cell signaling and in the synthesis of acetylcholine (a neurotransmitter) and is vital for brain development.^[23]

*The USP is a scientific organization that sets standards for the identity, strength, quality and purity of medicines, food ingredients and dietary supplements, manufactured, distributed and consumed worldwide.

Directions

1 or more capsules per day or as recommended by your health care professional.

Does Not Contain

Does not contain wheat, gluten, corn, yeast, artificial colors and flavors.

Cautions

If you are pregnant or nursing, consult your physician before taking this product.

Supplement Facts^{v2}

Serving Size 1 Capsule
Servings Per Container 90

1 capsule contains	Amount Per Serving	% Daily Value
Thiamin (Vitamin B1) (from Thiamine Hydrochloride USP)	50 mg	3,333%
Riboflavin (Vitamin B2 USP)	50 mg	2,941%
Niacin (as Niacinamide USP)	50 mg	250%
Vitamin B6 (as Pyridoxine Hydrochloride USP)	50 mg	2,500%
Folic Acid	800 mcg	200%
Vitamin B12 (as Methylcobalamin)	200 mcg	3,333%
Biotin	75 mcg	25%
Pantothenic Acid (as d-Calcium Pantothenate USP)	50 mg	500%
Choline Bitartrate	50 mg	*
Inositol NF	50 mg	*

* Daily Value not established

ID# 110090 90 Capsules

ID# 110180 180 Capsules

† These statements have not been evaluated by the Food and Drug Administration. This product is not intended to diagnose, treat, cure, or prevent any disease.

References

1. Rindi G. Thiamin. In: Ziegler E, Filer LJ, eds. Present Knowledge in Nutrition: International Life Sciences Institute; 1996:160-166.
2. Thiamine. Monograph. *Altern Med Rev*. Feb 2003;8(1):59-62.
3. Alaei Shahmiri F, Soares MJ, Zhao Y, Sherriff J. High-dose thiamine supplementation improves glucose tolerance in hyperglycemic individuals: a randomized, double-blind cross-over trial. *Eur J Nutr*. 2013 Oct;52(7):1821-4. *Epub* 2013 May 29.
4. Rivlin R. Riboflavin. In: Ziegler E, Filer LJ, eds. Present Knowledge in Nutrition: International Life Sciences Institute.; 1996:167-173.
5. Lee ES, Corfe BM, Powers HJ. Riboflavin depletion of intestinal cells in vitro leads to impaired energy generation and enhanced oxidative stress. *Eur J Nutr*. 2013 Aug;52(5):1513-21. *Epub* 2012 Nov 6.
6. Wilson CP, Ward M, McNulty H, Strain JJ, Trouton TG, Horigan G, Purvis J, Scott JM. Riboflavin offers a targeted strategy for managing hypertension in patients with the MTHFR 677TT genotype: a 4-y follow-up. *Am J Clin Nutr*. 2012 Mar;95(3):766-72. *Epub* 2012 Jan 25.
7. Huskisson E, Maggini S, Ruf M. The role of vitamins and minerals in energy metabolism and well-being. *J Int Med Res*. May-Jun 2007;35(3):277-289.
8. Sahebkar A. [Epub ahead of print] Effect of niacin on endothelial function: A systematic review and meta-analysis of randomized controlled trials. *Vasc Med*. 2014 Jan 3.
9. Mason CM, Doneen AL. Niacin-a critical component to the management of atherosclerosis: contemporary management of dyslipidemia to prevent, reduce, or reverse atherosclerotic cardiovascular disease. *J Cardiovasc Nurs*. 2012 Jul-Aug;27(4):303-16.
10. Leklem J. Vitamin B-6. In: Ziegler E, Filer LJ, eds. Present Knowledge in Nutrition: International Life Sciences Institute; 1996:174-183.
11. Rimm EB, Willett WC, Hu FB, et al. Folate and vitamin B6 from diet and supplements in relation to risk of coronary heart disease among women. *JAMA*. 1998;279(5):359-364.
12. Meydani SN, Ribaya-Mercado JD, Russell RM, Sahyoun N, Morrow FD, Gershoff SN. Vitamin B-6 deficiency impairs interleukin 2 production and lymphocyte proliferation in elderly adults. *Am J Clin Nutr*. 1991;53(5):1275-1280.
13. Talbott MC, Miller LT, Kerkvliet NI. Pyridoxine supplementation: effect on lymphocyte responses in elderly persons. *Am J Clin Nutr*. 1987;46(4):659-664.
14. Rydlewicz A, Simpson JA, Taylor RJ, Bond CM, Golden MH. The effect of folic acid supplementation on plasma homocysteine in an elderly population. *QJM*. Jan 2002;95(1):27-35.
15. Voutilainen S, Rissanen TH, Virtanen J, Lakka TA, Salonen JT. Low dietary folate intake is associated with an excess incidence of acute coronary events: The Kuopio Ischemic Heart Disease Risk Factor Study. *Circulation*. 2001;103(22):2674-2680.
16. Penninx BW, Guralnik JM, Ferrucci L, Fried LP, Allen RH, Stabler SP. Vitamin B(12) deficiency and depression in physically disabled older women: epidemiologic evidence from the Women's Health and Aging Study. *Am J Psychiatry*. 2000 May;157(5):715-21.
17. Mock DM. Biotin. In: Ziegler E, Filer LJ, eds. Present Knowledge in Nutrition: International Life Sciences Institute; 1996:220-235.
18. Sasaki Y, Sone H, Kamiyama S, Shimizu M, Shirakawa H, Kagawa Y, Komai M, Furukawa Y. Administration of biotin prevents the development of insulin resistance in the skeletal muscles of Otsuka Long-Evans Tokushima Fatty rats. *Food Funct*. 2012 Apr;3(4):414-9. *Epub* 2012 Jan 5.
19. Hemmati M, Babaei H, Abdolsalehei M. Survey of the effect of biotin on glycemic control and plasma lipid concentrations in type 1 diabetic patients in kermanshah in iran (2008-2009). *Oman Med J*. 2013 May;28(3):195-8.
20. Plesofsky-Vig N. Pantothenic Acid. In: Ziegler E, Filer LJ, eds. Present Knowledge in Nutrition: International Life Sciences Institute.; 1996:236-244.
21. Naruta E, Buko V. Hypolipidemic effect of pantothenic acid derivatives in mice with hypothalamic obesity induced by aurothioglucose. *Exp Toxicol Pathol*. 2001 Oct;53(5):393-8.
22. Ellinger S, Stehle P. Efficacy of vitamin supplementation in situations with wound healing disorders: results from clinical intervention studies. *Curr Opin Clin Nutr Metab Care*. 2009 Nov;12(6):588-95. Review.
23. Zeisel SH, Blusztajn JK. Choline and human nutrition. *Annu Rev Nutr*. 1994;14:269-96.